Ad Knotter

3.2. Mining

From early on, and all over the world, mining has been a crucial activity in human society.[1] It supplied minerals for making tools, weapons, and utensils. Precious metals such as gold and silver were won for their beauty and value, and for the supply of money. Coal was used by craftsmen and manufacturers, or in households for heating. Until well into the eighteenth century, mining developed at a slow pace. From the late eighteenth century industrial and transport revolutions resulted in the development of mining operations on a grander scale, at first of coal and iron ore, and later also of such metals as copper, lead, and tin. The mining of such precious minerals as silver, gold, and diamonds expanded as well. Mining became a global industry. In the following account I have selected some of the most important issues in the global history of labour in mining: migration, mobility, and control of the labour force; the variety of labour relations between proletarian and forced labour; gender; and industrial relations. To mobilize and attach workers to mining sites all over the world, mine management used various mechanisms of control in a broad array of labour relations. Unfree labour in different forms, ranging from debt bondage and indenture to convict labour and outright slavery, existed side by side with wage labour and subcontracted self-employment. Migrants were mobilized from nearby and far away, often resulting in an ethnically stratified labour force in the mines. Mining is generally perceived as an exclusively male and pre-eminently masculine domain, but historically in many districts women were employed in mining as well, while in others they were relegated to the home to perform reproductive tasks and fully support the male members of the miners' household. Although the image of mining as a strike-prone industry may not be fully warranted, in the twentieth century miners were at the forefront of radical movements and policies in many countries.

Labour relations in European mining from the fifteenth to the eighteenth century

In the medieval and early modern period, important mining developments took place in Central Europe, especially in the Alpine areas (Tirol), the Harz region, Saxony, Bohemia, and Hungary, where gold, silver, lead, copper, and iron were mined. In the

1 For a short overview, see John Temple, *Mining. An International History* (London, 1972). For early developments in China, see Joseph Needham, *Science and Civilisation in China. Volume 5. Chemistry and Chemical Technology. Part XIII. Mining*, by Peter J. Golas (Cambridge, 1999). For a general overview on the Americas since pre-Columbian times, see Helmut Waszkis, *Mining in the Americas. Stories and History* (Cambridge, 1993).

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fifteenth and sixteenth centuries, the scale of mining enterprises grew. Large sums of money were needed to develop mines, to pay for the drainage machines, and the sinking of deeper shafts. Mines were often owned by absentee shareholders (such as the famous Fugger family from Augsburg), who supplied the capital and collected the profits. A clear distinction emerged between the owners and the workers, resulting in a loss of privileges for both self-employed and wage labourers.[2] This led to sometimes violent disputes, which, according to the German mining historian Klaus Tenfelde, anticipated "a thoroughly modern dispute behaviour in industrial relations".[3] After the mid-fifteenth century collective actions of miners in the Saxon and Bohemian ore mountains became more frequent, for instance in Freiberg (1444–1469), Altenberg (1469), Schneeberg (1496–1498), and Joachimsthal (1517–1525). In the sixteenth century there were large miners' revolts in Bohemia, Saxony, and the Alpine regions, sometimes in connection with the so-called Peasants' War.[4]

Since medieval times iron, tin, and copper ores had been mined in other European areas as well. A salient example is tin mining in Cornwall. Originally, "free tinners" had worked their own leased property or formed small partnerships. In the seventeenth century a rapid increase in production proletarianized an ever larger section of the population. Miners were employed by specific forms of subcontracting, based on a sum per cubic foot or on the value of the ore sent to the surface. The lack of manifestations of class identity and trade unionism until the late nineteenth century is sometimes attributed to this "tribute system", as miners in this system considered themselves little entrepreneurs rather than workers. At that time, the tin mines in Cornwall were in decline, but in the wake of British colonization and global-mining operations, demand for Cornish mining skills provided opportunities all over the world. Tens of thousands left the region, not just to populate the developing mining districts of the world, but also to dominate them as senior and middle managers. In this way, Cornish mineworkers played a crucial part in the global expansion of mining during the nineteenth and early twentieth centuries. In spite of late trade union-

2 For a recent overview of labour relations in late-medieval German mining, see Hans-Joachim Kraschweski, "Arbeitsverhältnisse im spätmittelalterlichen Bergbau", and Andreas Bingener, Christoph Bartels, and Michael Fessner, "Soziale Entwicklungen – von der Bruderschaft zur Knappschaft", in: Christoph Bartels and Rainer Slotta (eds), *Geschichte des deutschen Bergbaus. Band I. Der alteuropäische Bergbau. Von den Anfängen bis zur Mitte des 18. Jahrhunderts* (Münster, 2012), pp. 297–305 and 409–420.

3 Klaus Tenfelde, "Streik als Fest. Zur frühneuzeitlichen Bergarbeiterkultur", in: Richard van Dülmen and Norbert Schindler (eds), *Volkskultur. Zur Wiederentdeckung des vergessenen Alltags (16.–20. Jahrhundert)* (Frankfurt am Main, 1984), pp. 177–202, 188.

4 *Ibid*., pp. 189–192; Uwe Schirmer, "Das Erzgebirge im Ausstand. Die Streiks in den Revieren zu Freiberg (1444–1469), Altenberg (1469), Schneeberg und Annaberg (1469–1498) sowie in Joachimsthal (1517–1525) im regionalen Vergleich", and Adolf Laube, "Bergarbeiter- und Bauernbewegungen in Deutschland von der Mitte des 15. Jahrhunderts bis zum Ende des Bauernkriegs 1525/26", in: Angelika Westermann and Ekkehard Westermann (eds), *Streik im Revier. Unruhe, Protest und Ausstand vom 8. bis 20. Jahrhundert* (St. Katharinen, 2007), pp. 65–93 and 113–135.

ism in their home country, in the British settler colonies they were often pioneers in labour organization.[5]

Of paramount importance for early modern European industry were the supplies of Swedish and Russian iron ore, mined respectively in the Bergslagen region west of Stockholm, and in the Ural mountains. The labour forces in these regions were quite different. In Sweden, production was in the hands of small landowning households. Members divided the hours of work between tasks performed in the mine, charcoal burning, transportation of pig iron, and agricultural work. In the seventeenth century it was only around certain mines that a small population of more or less specialized miners came into existence. In the Urals, serfs or conscripted so-called state peasants were employed, coerced to work in the mines and the ironworks as part of their labour duties.[6]

In several places in Europe, coal has been mined since the Middle Ages. Before industrialization, markets were predominantly local, unless transport was cheap, as it was for Newcastle coal from the Durham and Northumberland coalfields, which was sold all around the North Sea. For this reason, and because of rising energy needs in Britain itself, the British coal industry expanded earlier than its European counterparts. The supply of coal in Britain has been identified as a major prerequisite for its industrialization in the late eighteenth century.[7] From a labour history perspective the debate about disciplining the workforce is perhaps the most interesting. In early modern Britain, two systems of control stand out: the "yearly bond" in the north-east of England, and the "colliery serfdom" in the Scottish coalfields. In eighteenth-century Durham and Northumberland, "annual bonds" (the obligation to work in the mine during a full year) were widely used to track down and legally punish those who left before the end of the contracted period. British labour historians

5 Roger Burt, "Industrial Relations in the British Non-Ferrous Mining Industry in the Nineteenth Century", *Labour History Review*, 71, 1 (2006), pp. 57–79; *idem*, "Cornwall as a Social Mining Region", in: Angelika Westermann (ed.), *Montanregion als Sozialregion. Zur gesellschaftlichen Dimension von "Region" in der Montanwirtschaft* (Husum, 2012), pp. 239–252; Gill Burke, "The Cornish Diaspora of the Nineteenth Century", in: Shula Marks and Peter Richardson (eds), *International Labour Migration. Historical Perspectives* (London, 1984), pp. 57–75; John Rule, *Cornish Cases. Essays in Eighteenth and Nineteenth Century Social History* (Southampton, 2006).

6 Anders Florén, "Social Organization of Work and Labour Conflicts in Proto-Industrial Iron Production in Sweden, Belgium and Russia", in: Catharina Lis, Jan Lucassen, and Hugo Soly (eds), *Before the Unions. Wage Earners and Collective Action in Europe, 1300–1850*, Supplement 2 *International Review of Social History*, 39 (1994), pp. 83–113; Anders Florén and Göran Rydén, with Ludmila Dashkevich, D.V. Gavrilov, and Sergei Ustiantsev, "The Social Organisation of Work at Mines, Furnaces and Forges", in: Maria Ågren (ed.), *Iron-Making Societies. Early Industrial Development in Sweden and Russia, 1600–1900* (New York and Oxford, 1998), pp. 61–139.

7 E.A. Wrigley, *Continuity, Chance and Change. The Character of the Industrial Revolution in England* (Cambridge, 1988); *idem*, *Energy and the English Industrial Revolution* (Cambridge, 2010); Kenneth Pomeranz, *The Great Divergence. China, Europe and the Making of the Modern World Economy* (Princeton, 2000).

have been debating this phenomenon from an early date.[8] Perhaps the most convincing explanation is provided by James Jaffe: because management was not (yet) able to control the labour process at the point of production, it at least tried to control the labour market.[9]

Although quite different from the yearly bonds in the coalfields of north-east England, Scottish "colliery serfdom" as a system of life-long bondage (like feudal serfs) was designed to guarantee local labour supply as well. It was established in 1606, consolidated in the seventeenth century, and after a first act of emancipation in 1775 not abolished completely until 1799. The "independent colliers" of the Scottish coalfields in the nineteenth century, brought to life by labour historian Alan Campbell,[10] perceived their eighteenth-century forbearers as "degraded slaves", but this picture has been nuanced in research on the agency of the "collier serfs", who were far from docile, subdued, or deferential, and who were able to act collectively. Paradoxically, the self-perception of "independence", it is argued, may well have originated before the abolition of serfdom.[11]

A global industry

Although mining activities can be traced in many parts of the world long before European expansion, a globally connected mining industry only emerged in the era of colonialism and imperialism from the sixteenth to the twentieth century. Methods to exploit and process metals and minerals had been developed in pre-conquest America, Asia, and Africa, but mining was small scale, primitive, and based only on read-

8 Sydney Webb, *The Story of the Durham Miners (1662–1921)* (London, 1921), pp. 7–15; T.S. Ashton and J. Sykes, *The Coal Industry of the Eighteenth Century* (Manchester, 1929), pp. 70–99; Robert Colls, *The Pitman of the Northern Coalfield. Work, Culture and Protest, 1790–1850* (Manchester, 1987), pp. 64–73.

9 James A. Jaffe, *The Struggle for Market Power. Industrial Relations in the British Coal Industry 1800–1840* (Cambridge, 1991), pp. 49–50, 100–104.

10 Alan B. Campbell, *The Lanarkshire Miners. A Social History of their Trade Unions 1775–1874* (Edinburgh, 1979), pp. 9–12; Alan Campbell and Fred Reid, "The Independent Collier in Scotland", and Alan B. Campbell, "Honourable Men and Degraded Slaves: A Comparative Study of Trade Unionism in Two Lanarkshire Mining Communities, c. 1830–1874", in: Royden Harrison (ed.), *Independent Collier. The Coal Miner as Archetypal Proletarian Reconsidered* (Hassocks, 1978), pp. 54–74 and 75–113.

11 Christopher A. Whatley, "'The Fettering Bonds of Brotherhood': Combination and Labour Relations in the Scottish Coal-Mining Industry *c.* 1690–1775", *Social History*, 12, 2 (1987), pp. 139–154; *idem*, "Scottish 'Collier Serfs' in the 17th and 18th Centuries: A New Perspective", and a rejoinder by Alan Campbell, "18th Century Legacies and 19th Century Traditions: The Labour Process, Work Cultures and Miners' Unions in the Scottish Coalfields Before 1914", in: Ekkehard Westermann (ed.), *Vom Bergbau- zum Industrierevier* (Stuttgart, 1995), pp. 217–238 and 239–255. See also Rab Houston, "Coal, Class and Culture: Labour Relations in a Scottish Mining Community, 1650–1750", *Social History*, 8, 1 (1983), pp. 1–18.

ily available materials.[12] The Europeans brought not only a lust for profit, but also more accomplished techniques to gain from mining. The wish to extract more of the earth's riches was a driving force behind the Spanish exploration and conquest of the "New World". The iconic mining site of early modern colonialism is the Potosí silver mine in today's Bolivia, "perhaps the world's most famous mining district".[13] From the sixteenth century onwards, it was Spanish America's, and indeed the world's, greatest silver producer. In the seventeenth century, with around 160,000 inhabitants it was one of the world's biggest cities as well. The flow of bullion from the New World allowed Europe to balance its trade with Asia and in this way contributed to the formation of an integrated world economy.[14]

Potosí is infamous for its extreme forms of coercion to secure workers, the so-called *mita* system of forced and tributary Indian labour.[15] Male inhabitants in the wide surroundings were obliged to work at the mines on a rotational basis. This was combined with forms of wage labour and self-employment of workers mining on their own account in their "free time". In a recent history of Potosí mining, working on one's own was considered an act of resistance,[16] but it also made working in the mines attractive for coerced workers. More than 10,000 people had to migrate every year to the Potosí mines from thousands of places, and brute force had to be combined with more subtle mechanisms to ensure the workers' compliance, i.e. the opportunity to gain a supplementary income by self-employment.[17] The mandatory conscription affected only men, but wives and children moved with them to Potosí, where they assisted by sorting and transporting the ore.[18] In the eighteenth century the number of *mitayos* diminished, also proportionally, but the system of forced labour ceased to exist only after Bolivia's independence (1825). It was then replaced by a system of subcontracting. In the nineteenth century, agro-mining companies

12 Needham, *Science and Civilisation in China. Mining*; Waszkis, *Mining in the Americas.*

13 Kendall W. Brown, *A History of Mining in Latin America. From the Colonial Era to the Present* (Albuquerque, 2012), p. xii; for a concise overview, see Renate Pieper, "Die Reviere von Hochperu und Neuspanien als Sozialregionen (16.–18. Jahrhundert)", in: Westermann, *Montanregion als Sozialregion*, pp. 253–266.

14 Andre Gunder Frank, *ReORIENT. Global Economy in the Asian Age* (Berkeley, 1998).

15 Peter Bakewell, *Miners of the Red Mountain. Indian Labor in Potosí, 1545–1650* (Albuquerque, 1984); Enrique Tandeter, *Coercion and Market. Silver Mining in Colonial Potosí, 1692–1826* (Albuquerque, 1993).

16 Brown, *History of Mining in Latin America*, ch. 4.

17 Rossana Barragán Romano's review of Brown, *A History of Mining in Latin America*, *International Review of Social History*, 60, 2 (2015), pp. 287–290, 290.

18 Pascale Absi, "Lifting the Layers of the Mountain's Petticoats. Mining and Gender in Potosí's Pacamama", in: Jaclyn J. Gier and Laurie Mercier (eds), *Mining Women. Gender in the Development of a Global Industry, 1670 to 2005* (Basingstoke, 2006), pp. 58–70, 59.

owned haciendas as well as silver mines and obliged their tenants (*peons*) to work in the mines.[19]

Potosí was not the only mine in Latin America exploited by the early modern colonizers. Silver mining was developed in several sites in Mexico too. Mexican mining appears to have been based mainly on wage labour by so-called *mestizos* (of mixed descent, while the coerced Potosí *mitayos* were indigenous Indians).[20] The production of gold and diamonds centred on Brazil. Diamond deposits were discovered in the Brazilian Minas Gerais district in the 1720s. The miners were mostly African slaves, and the discovery of these deposits was followed by a massive increase in unfree labour.[21] The exploitation of the Brazilian diamond mines set off a rearrangement of the global diamond trade, which until that time had been an Indian monopoly. In India's diamond fields miners worked in small units, but because of the labour-intensive production process the total number of workers could be several tens of thousands in each field. Men dug the pits and took out the earth, which was then carried away in baskets by women and children to be dried and then sieved and searched to discover the diamonds. Miners were contract labourers who worked for wages in cash. Most of them were impoverished peasants, who moved seasonally from agricultural areas to the mines.[22]

In the nineteenth and twentieth centuries the European colonial powers stepped up their rush to exploit available resources globally. Capital was invested in the mining of coal, metals, and minerals in every corner of the world. Africa became the stage of major raids to exploit its geological riches. Some notorious examples in Southern Africa are diamond mining after the Kimberley strike of 1868 and its subsequent development by the British colonizer Cecil Rhodes and his De Beers Consolidated Mines Company (formed in 1888), and gold mining starting to develop in the Witwatersrand Basin in the mid-1880s, extending into Southern Rhodesia. In 1917 the Anglo-American Corporation of South Africa was formed as a gold mining company. In 1926 it became the majority stakeholder in the De Beers company as well, and in the years to follow it began mining copper in Northern Rhodesia (today's Zambia). The Central African Copperbelt stretched from Northern Rhodesia into Katanga (part of Belgian Congo). The Katanga fields were developed in the beginning of the twentieth century by the British company Tanganyika Concessions Ltd (indirectly

19 Erick D. Langer, "The Barriers to Proletarianization: Bolivian Mine Labour, 1826–1918", in: Shahid Amin and Marcel van der Linden (eds), *"Peripheral" Labour? Studies in the History of Partial Proletarianization*, Supplement 4 *International Review of Social History*, 41 (1996), pp. 27–51, 38–48.
20 John Tutino, *Making a New World. Founding Capitalism in the Bajío and Spanish North America* (Durham, 2011). See also Peter J. Blakewell, *Silver Mining in Colonial Mexico, Zacatecas 1546–1700* (Cambridge, 1971).
21 Karin Hofmeester, "Working for Diamonds from the 16th to the 20th Century", in: Marcel van der Linden and Leo Lucassen (eds), *Working for Labor. Essays in Honor of Jan Lucassen* (Leiden, 2012), pp. 19–46, 37.
22 *Ibid*., pp. 25–27.

also a creation of Cecil Rhodes). In 1906, this company merged with the Belgian Comité Spécial du Katanga, dominated by the Société Générale de Belgique, to form the Union Minière du Haut-Katanga.[23]

Colonial status was no prerequisite for foreign exploitation of mineral resources, as becomes clear in the mining history of nineteenth- and twentieth-century Latin America. The famous El Teniente Copper Mine in Chile, for instance, was originally owned by Chilean families, but, copper becoming in high demand with the development of electricity, in 1904 the American Smelting and Refining Company (controlled by Rockefeller) stepped in. In 1908 the mine was bought by the Guggenheim brothers and merged with their US copper mines into the Kennecott Copper Corporation. Copper mining expanded during World War I and in the 1920s. Miners were recruited by agents (*enganchadores*), mainly among rural workers (*campesinos*) in the agricultural regions of southern and central Chile.[24] In Peruvian mining of (mainly) copper, the Cerro de Pasco Corporation, formed in 1902 by an American syndicate composed of, among others, J.P. Morgan, became the dominant force.[25]

Tin is another mineral exploited for the global market. As the substantial Cornish deposits in Britain were gradually depleted, the sources in Malaysia, Indonesia, and Bolivia were brought into production networks that eventually spanned the entire globe. In the interwar years Congo and Nigeria became important producers.[26] The labour history of tin mining has been studied in several areas,[27] particularly in Bolivia.[28] Originally mined as a by-product of silver, Bolivian tin mining grew rap-

23 Charles Perrings, *Black Mineworkers in Central Africa. Industrial Strategies and the Evolution of an African Proletariat in the Copperbelt, 1911–41* (New York, 1979).

24 Thomas Miller Klubock, *Contested Communities. Class, Gender, and Politics in Chile's El Teniente Copper Mine, 1904–1951* (Durham, NJ, 1998), pp. 20–38.

25 Dirk Kruijt and Menno Vellinga, *Labor Relations and Multinational Corporations. The Cerro de Pasco Corporation in Peru (1902–1974)* (Leiden, 1979); Josh DeWind, *Peasants become Miners. The Evolution of Industrial Mining Systems in Peru, 1902–1974* (New York, 1987).

26 Mats Ingulstad, Andrew Perchard, and Espen Storli (eds), *Tin and Global Capitalism. A History of the Devil's Metal, 1850–2000* (London, 2014).

27 In Nigeria British companies began tin mining in 1906: Bill Freund, *Capital and Labour in the Nigerian Tin Mines* (Harlow, 1981); see also *idem*, "Labour Migration to the Northern Nigerian Tin Mines, 1903–1945", *Journal of African History*, 22, 1 (1981), pp. 73–84. In Malayan tin mining European companies replaced Chinese owners in the 1910s and 1920s: Amarjit Kaur, *Wage Labour in Southeast Asia since 1840. Globalization, the International Division of Labour and Labour Transformations* (London, 2004), pp. 27–58; *idem*, "Race, Gender and the Tin Mining Industry in Malaya, 1900–1950", in: Kuntala Lahiri-Dutt and Martha Macintyre (eds), *Women Miners in Developing Countries. Pit Women and Others* (Aldershot, 2006), pp. 73–88. In Indonesia tin mining was developed by the Dutch Billiton Company: Jurrien van den Berg, "Tin Island: Labour Conditions of Coolies in the Billiton Mines in the Nineteenth and Early Twentieth Centuries", in: Vincent J.H. Houben and J. Thomas Lindblad (eds), *Coolie Labour in Colonial Indonesia. A Study of Labour Relations in the Outer Islands, c. 1900–1940* (Wiesbaden, 1999), pp. 209–229.

28 A classic (anthropological) study is June C. Nash, *We Eat the Mines and the Mines Eat Us. Dependency and Exploitation in Bolivian Tin Mines* (New York, 1993).

idly in the 1890s, and by 1900 Bolivia had become one of the largest producers in the world. The industry was dominated by foreign capital, mainly from Chile, but also from Britain and the USA. High levels of capitalization brought about great changes in labour conditions. Migration of full-time wage labourers to the tin mines in northern Potosí largely severed the links between the peasantry in the surrounding countryside, but on the remaining agro-mining complexes in the southern part the presence of peasant-miners on the estates retarded full proletarianization.[29]

Coal mining is another global industry with enormous impact on labour relations in different parts of the world. To a great extent nineteenth- and early twentieth-century globalization, including colonialism, depended on a transport and industrial revolution, based on coal as a supplier of energy. With rising energy needs coal mining expanded globally. Wherever in the world coal was found, even in the most desolate and remote areas, mines were opened, and to enable exploitation mine operators had to find, mobilize, and direct workers to these sites.[30]

Mobilizing labour

An urgent quest for labour characterizes the history of mining everywhere and drove varying constellations of labour relations. At the start, experienced miners were recruited from other mining areas. Migration trajectories, return and circular migration, resulting in ethnic diasporas of skilled miners, can be traced in many mining districts. Much of the global expansion of mining in the nineteenth and twentieth centuries could be achieved only because of the migration of skilled groups of workers from Great Britain (like the Cornish miners, mentioned above). They introduced mining skills and techniques, and often continued to hold privileged positions afterwards. Migration trajectories of British miners can be traced in almost every mining area in the British Empire, but also in other parts of the world. Transference of experience and technological skills, acquired in the British mines, was essential for the development of the US mining industry for instance.

Early migration of skilled groups of workers to introduce mining skills was supplemented by waves of inexperienced migrants, both from the surrounding countryside and from more distant places, regions, and countries. The mobilization of labour for the mines was often closely linked to the transition from agriculture to industry, the creation of a wage labour market, and the formation of a mining proletariat. These processes were not easy or straightforward. Workers had to be found who could be coerced or motivated to move, changing not only places, but their entire way of life. Cross-border migratory labour connected mining districts, regions, and

29 Langer, "The Barriers to Proletarianization", pp. 49–50.

30 Ad Knotter and David Mayer (eds), *Migration and Ethnicity in Coalfield History: Global Perspectives*, Special Issue 23, *International Review of Social History*, 60 (2015).

countries, and mobilized new groups of workers of a variety of national and ethnic descent. Ethnic (minority) groups were mobilized from outside, but also from within national states and empires. Telling examples in coal mining in the nineteenth and early twentieth centuries are: Flemish workers to the Walloon coalfields in Belgium, Irish to Scotland in the UK (before Irish independence), Poles to the Ruhr area in the German empire (before Polish independence), African-Americans from the south to Virginia and Alabama in the US, migrants from the French colonies in the Maghreb (Algeria and Morocco) to France, and Koreans to the Hokkaidō and Chikuhō coalfields in Japan (Korea then being part of the Japanese empire). Their mobilization as miners reflected the low status of work in the mines, and also the position of migrants as secondary workers within the mines.[31]

Gold rushes are perhaps anomalies in the "normal", more gradual build-up of a migrant labour force in mining, but they nevertheless exemplify the extraordinary push mining developments could give to migration and the formation of multicultural communities.[32] The gold rushes to California and Australia in the mid-nineteenth century were followed by one to South Africa in the late 1880s. The growth of gold mining caused the development of Johannesburg and the Witwatersrand, nowadays the prime metropolitan area of South Africa. Coal was exploited at Witbank too. As the coal mines produced mainly for the gold industry, they were often owned by gold-mining companies. Their recruitment agency, the Witwatersrand Native Labour Association (WNLA), popularly known as "Wenela", constructed an extensive recruiting network across the three southern provinces of Portuguese Mozambique, both for the gold mines and the collieries.[33] By 1910, 100,000 men from all over Southern Africa had come to work in the gold mines. Their numbers grew to 300,000 by 1940, and 500,000 by 1985.[34]

There is a wealth of research on African labour in the mines in Southern Africa, and some important debates in global labour history have been triggered by seminal publications on this issue. The South African migration system was founded on the premise that men would migrate as wage labourers and women would remain behind to work in the fields. In this way male wages could be kept low as they did not include the costs of reproduction at home. Starting from the oscillation of African

31 Ad Knotter, "Migration and Ethnicity in Coalfield History: Global Perspectives", in: *ibid.*, pp. 13–39.

32 Susan Lee Johnson, *Roaring Camp. The Social World of the California Gold Rush* (New York, 2000).

33 The mobilization of migratory labour for the South African gold mines has been the subject of numerous studies. See, among others, Ruth First, *Black Gold. The Mozambican Miner, Proletarian and Peasant* (Manchester, 1983); Alan Jeeves, *Migrant Labour in South Africa's Mining Economy. The Struggle for the Gold Mines' Labour Supply, 1890–1920* (Kingston, Ont., 1985); T. Dunbar Moodie (with Vivienne Ndatshe), *Going for Gold. Men, Mines, and Migration* (Berkeley, 1994). On the migrant labour in the collieries, see Peter Alexander, "Oscillating Migrants, 'Detribalised Families', and Militancy: Mozambicans on Witbank Collieries, 1918–1927", *Journal of Southern African Studies*, 27, 3 (2001), pp. 505–525.

34 Moodie, *Going for Gold*, p. 1.

migratory wage labourers between the mines and subsistence agriculture of the peasant families left behind, the South African Marxist sociologist Harold Wolpe was able to historicize the rather abstract concept of "articulation of modes of production" in the writings of Louis Althusser and his followers in the 1970s,[35] a concept which for a while also captured the imagination of early modern European labour historians.[36] A second very influential work is Charles van Onselen's *Chibaro*, which showed that in the mines of Southern Rhodesia (today's Zimbabwe) the particular form of contract labour designated to control African migratory labour in "prison-like conditions" was perfectly compatible with the development of capitalism in Southern Africa.[37] This recruitment system was dismantled, however, when market forces were sufficiently developed to push workers to the mines in large numbers.[38]

The importance of oscillating migrants working seasonally in the mines has been established in numerous studies on mining labour in several parts of the world. By recruiting peasant-migrants from the land, labour supply and the agrarian seasons were interconnected. Two salient examples include the Jahria coalfield in India (opened in the 1890s),[39] and the Donbass mining region in the Ukraine (opened in the 1870s). The Ukrainian population being persistently reluctant to enter the mines, Russian migrants and migratory workers formed the rank and file of the min-

35 Harold Wolpe, "Capitalism and Cheap Labour-Power in South Africa: From Segregation to Apartheid", *Economy and Society*, 1, 4 (1972), pp. 425–456; *idem* (ed.), *The Articulation of Modes of Production. Essays from Economy and Society* (London, 1980).

36 It became particularly relevant in debates on so-called proto-industry and its relationship with the peasant family in the 1970s and 1980s: Peter Kriedte, Hans Medick, and Jürgen Schlumbohm, *Industrialisierung vor der Industrialisierung. gewerbliche Warenproduktion auf dem Land in der Formationsperiode des Kapitalismus* (Göttingen, 1977). The debate has subsided, if only because the application of the Marxist concept of mode of production to the peasant or family economy is not self-evident. Cf. Ad Knotter, "Problems of the 'Family Economy': Peasant Economy, Domestic Production and Labour Markets in Pre-industrial Europe", in: Maarten Prak (ed.), *Early Modern Capitalism. Economic and Social Change in Europe, 1400–1800* (London, 2001), pp. 135–160. From a Marxian perspective, "partial proletarianization" would perhaps be more apt to designate the links between wage labour and the peasantry. Cf. Amin and van der Linden, *"Peripheral" Labour?*

37 Charles van Onselen, *Chibaro. African Mine Labour in Southern Rhodesia, 1900–1933* (London, 1976).

38 *Ibid*., pp. 116–119.

39 Dilip Simeon, *The Politics of Labour under Late Colonialism. Workers, Unions and the State in Chota Nagpur 1928–1939* (New Delhi, 1995); *idem*, "Coal and Colonialism: Production Relations in an Indian Coalfield, *c*. 1895–1947", in: Amin and van der Linden, *"Peripheral" Labour?*, pp. 83–108. C.P. Simmons, "Recruiting and Organizing an Industrial Labour Force in Colonial India: The Case of the Coal Mining Industry, c. 1880–1939", *The Indian Economic and Social History Review*, XIII, 4 (1976), pp. 455–485; *idem*, "Seasonal Labour Oscillation in the Indian Coal Mining Industry before Independence", in: Marc Gaborieau and Alice Thorner (eds), *Asie du Sud. Traditions et changements. Sèvres 8–13 juillet 1978* (Paris, 1979), pp. 477–482.

ing labour force.[40] Likewise, in Peru, when the Cerro de Pasco Corporation began mining, the labour force consisted of peasant workers who were primarily engaged in subsistence agriculture. In the early days of mining the company tried to control the seasonal flow of workers through a debt labour system known as *enganche* (the hook). Company-commissioned *enganchadores* (labour contractors) advanced loans to peasants, who had to repay them by working in the mines. The company set wages so low that workers were often unable to pay for their living expenses or repay their *enganche* debts.[41]

Controlling labour

The Peruvian example of the *enganche* system makes clear that mobilizing and controlling labour were inextricably intertwined. Once mobilized to do the heavy work in the remote mining sites, companies had to find ways to prevent the workforce from leaving. In Malaysian and Indonesian tin mining labour control of the predominantly Chinese workers was primarily achieved through the mechanism of indenture: mine owners or coolie brokers paid the travel costs and expenses of the migrant worker in exchange for a contractual obligation for a specified period – usually three years. Wages were so low, that paying back the costs plus interest at the end of this three years was often impossible, so the worker had to be indentured for a further period. Women were usually employed as *dulang* washers (or panners), not as miners. They stood in water all day long to recover the tin, which was then deposited in large sluice boxes. During the period 1911–1947 women *dulang* washers formed between eleven and twenty per cent of the total workforce.[42]

These kinds of systems of coercion and dependency were not confined to migrant labour. In the coalfields of British India (Bengal), mine owners had purchased large tracts of land near the pits and had developed a service tenancy arrangement, whereby peasants were granted a small piece of land in return for working a certain number of days in the company mine instead of paying rent, on pain of eviction.[43] In this way the colliery owners were able to bind a permanent supply of mining labour. The system had been applied by early starters in the Indian coalfields and persisted

40 Theodore H. Friedgut, *Iuzovka and Revolution. Vol. I. Life and Work in Russia's Donbass, 1869–1924* (Princeton, 1989).

41 DeWind, *Peasants become Miners*. The *enganche* system of indebted labour was also used to mobilize and control plantation labour in Peru, and has elicited a more general debate on the character of debt bondage as unfree labour. Cf. Tom Brass, "The Latin American *Enganche* System", in: *idem*, *Towards a Comparative Political Economy of Unfree Labour. Case Studies and Debates* (Abingdon, 1999), pp. 182–202.

42 Kaur, *Wage Labour in Southeast Asia since 1840*, pp. 37–49; *idem*, "Race, Gender and the Tin Mining Industry".

43 Simmons, "Recruiting and Organizing an Industrial Labour Force", pp. 463–471; Simeon, *The Politics of Labour under Late Colonialism*, p. 26.

into the 1950s. For more recently established enterprises, control of the migratory peasant-miners was achieved by means of subcontracting. Labour contractors were responsible for the entire labour process, from the hiring of the labour force to the cutting and loading of coal. A contractor recruited relatives and personal friends from his home village or thereabout, and made every effort to ensure that his "gang" would return to a particular mine next year. He advanced train fares, food, and money to his co-villagers, later to be deducted from wages earned, obliging workers to stay with him and to work at a particular colliery.[44]

Systems of subcontracting were widely used elsewhere as well. Labour for the Nigerian tin mines was recruited by a "network of contractors and other parasitic intermediaries".[45] In Chinese coal mining until the 1920s the largest part of the labour force, up to between sixty and eighty per cent, were recruited by contractors. Apart from supplying labour, many contractors also had to provide most of the materials to work the mine.[46] A similar recruiting system existed for the Russian seasonal miners in the Ukrainian Donbass. Agents went to the villages to persuade peasants to work in the mines, paying their travel and living expenses. These advances were later deducted from wages, keeping the worker in debt from the beginning.[47] Also in Japan, a system of recruitment by labour contractors was generally used in coal and other mines. A contractor hired several groups of ten to twenty mineworkers from farming backgrounds, provided lodging, and supervised labour underground. On behalf of the mine owners the contractors had complete authority over the workforce, both at work and in daily life. They recruited the miners, supervised them at the production site, and controlled their life at their lodges.[48]

In other cases blunt force was used to recruit people to work in the mines and stay there. Especially in the start-up of mining operations, various forms of forced labour were quite common. We find several examples in Chinese coal mining well into the twentieth century, be it in the form of convict labour, debt servitude, or servile labour.[49] In the Dutch Indies (Indonesia), the labour shortage at the start of the Ombilin coal mines (West Sumatra) was "solved" by the forced employment of convict labourers, both political and criminal prisoners, from other parts of the colony. Convict and contract labourers dominated the growing number of miners until the first half of the 1920s.[50] In the nineteenth-century southern USA, convict labour of (pre-

44 Simeon, *The Politics of Labour under Late Colonialism*, pp. 27, 149; Simmons, "Recruiting and Organizing an Industrial Labour Force", pp. 471–482.

45 Freund, "Labour Migration", p. 83.

46 Tim Wright, "'A Method of Evading Management' – Contract Labor in Chinese Coal Mines before 1937", *Comparative Studies in Society and History*, 23, 4 (1981), pp. 656–678.

47 Friedgut, *Iuzovka and Revolution. Vol. I*, pp. 234, 260–263, 269–271.

48 Nimura Kazuo, *The Ashio Riot of 1907. A Social History of Mining in Japan* (Durham, NC, 1997), pp. 161–178.

49 Tim Wright, *Coal Mining in China's Economy and Society 1895–1937* (Cambridge, 1984), p. 165.

50 Erwiza, "Miners, Managers and the State: A Socio-Political History of the Ombilin Coal-Mines, West Sumatra, 1892–1996 (Ph.D. dissertation, University of Amsterdam, 1999), pp. 36–41. See also

dominantly) African-Americans was regularly used in the coal mines of Georgia, Tennessee, and Alabama after the abolition of slavery (the employment of slaves had been common in the mines before).[51] They often remained in the mines after they had been released. In this way the system offered both an instrument for disciplining the black labour force and for securing a steady flow of cheap labour for the mines.

In Japan, labour scarcity at the start of the Hokkaidō coal mines (from 1882) was also solved by convict labour. After 1894 this was replaced by a system of recruitment by labour contractors. After 1939 coercive mobilization of Koreans in the mines and other industries became important in the Japanese war economy. Between 1939 and 1945 more than 300,000 Koreans were sent to Japanese mines, most against their will.[52] Like the Japanese, the Nazi-German war economy used forced labour on a massive scale during World War II, both in Germany itself and in the European occupied territories.[53] In this system ethnic discrimination and forced labour were closely interrelated, as most of the deployed workers were so-called *Ostarbeiter* and prisoners of war from Poland, Ukraine, and Russia, whom the Nazis considered to be of an inferior "race".

But mining companies used not only "the stick" by forcefully pushing labour into the mines, they could also use "the carrot" of seduction by offering facilities for workers and their families. This seems to have been the case in Northern Rhodesian / Zambian copper mining.[54] To alleviate the shortage of labour caused by the labour demand and relatively high wages elsewhere in Southern Africa, the copper mining companies allowed wives at worksites to attract male workers. Proletarian families living on the company compounds were much more common here than elsewhere in Southern Africa, where migratory labour based in rural household formation prevailed. In the Congolese part of the Copperbelt as well, by the 1920s the circular migration of young men began to give way to family migration. Mining companies adopted policies designed to support family life to stabilize the labour

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Erwiza Erman, "Generalized Violence: A Case Study of the Ombilin Coal Mines, 1892–1996", in: Freek Colombijn and Thomas J. Lindblad (eds), *Roots of Violence in Indonesia. Contemporary Violence in Historical Perspective* (Leiden, 2002), pp. 105–131.

51 Ronald L. Lewis, *Black Coal Miners in America. Race, Class, and Community Conflict, 1780–1980* (Lexington, 1987), pp. 3–35; Alex Lichtenstein, *Twice the Work of Free Labor. The Political Economy of Convict Labor in the New South* (London, 1996).

52 Ken C. Kawashima, *The Proletarian Gamble. Korean Workers in Interwar Japan* (Durham, NC, 2009), pp. 25–45; Michael Weiner, *Race and Migration in Imperial Japan* (London and New York, 1994), pp. 112–113, 133–135, 150, 205.

53 Klaus Tenfelde and Hans-Christoph Seidel (eds), *Zwangsarbeit im Bergwerk. Der Arbeitseinsatz im Kohlenbergbau des Deutschen Reiches und der besetzten Gebiete im Ersten und Zweiten Weltkrieg, Band I: Forschungen* (Essen, 2005).

54 George Chauncey Jr., "The Locus of Reproduction: Women's Labour in the Zambian Copperbelt, 1927–1953", *Journal of Southern African Studies*, 7, 3 (1981), pp. 135–164; Jane L. Parpart, *Labor and Capital on the African Copperbelt* (Philadelphia, 1983); *idem*, "The Household and the Mine Shaft: Gender and Class Struggles on the Zambian Copperbelt, 1926–64", *Journal of Southern African Studies*, 13, 1 (1986), pp. 36–56.

force and to compete more effectively for workers. Workers and their families were provided with accommodation, food rations, health care, and schools.[55]

Likewise, during the 1920s, Kennecott Copper Corporation, the American owner of Chile's El Teniente Copper Mine, implemented a set of social welfare policies, which complemented traditional coercive forms of labour control to combat high levels of turnover. The programme aimed to reform workers' social and cultural lives and to train a permanent, reliable workforce. Part of this reform was the support of nuclear families formed by a male wage earner and a female housewife. Fathers and husbands were supposed to be tied down by family responsibilities, which would make them a more disciplined workforce. Social workers were hired to pay home visits and to teach women domestic skills so that they would be able to administer the family wage more efficiently.[56]

Paternalism, as this strategy of intervention in workers' family lives is commonly called in European labour history,[57] entailed a wide variety of efforts to create an environment in which a worker would comply with the harsh labour conditions in the mines, thus limiting the need to resort to external means of coercion and control. Companies subsidized a wide range of social services, such as housing, pension schemes, schools, and churches, to attract workers and to encourage them to settle down with their families. Paternal welfare provisions were designed to link the worker closer to the company, and were combined with control and the maintenance of discipline, reaching into the family lives of the workers. Although the above examples show that paternalism was a strategy among mine owners in different parts of the world, it was most prevalent in European and North American mining.[58]

Gendering labour

In 1975, the British sociologist Martin Bulmer gave an overview of "sociological models of the mining community". All characteristics of this "community" were related to the men's work. There was only scant reference to the female members of the community, and the one time women were mentioned they did not seem to have a life of

55 John Higginson, *A Working Class in the Making. Belgian Colonial Labor Policy, Private Enterprise, and the African Mineworker, 1907–1951* (Madison, 1989), pp. 61–85.

56 Thomas Miller Klubock, "Working-Class Masculinity, Middle-Class Morality, and Labor Politics in the Chilean Copper Mines", *Journal of Social History*, 30, 2 (1996), pp. 435–463, 436–437.

57 See, among others, on France, Peter Stearns, *Paths to Authority. The Middle Class and the Industrial Labor Force in France, 1820–48* (Urbana, 1978), and, on the British textile industry, Patrick Joyce, *Work, Society and Politics. The Culture of the Factory in Later Victorian England* (New Brunswick, 1980).

58 On France: Donald Reid, "Industrial Paternalism: Discourse and Practice in Nineteenth-Century French Mining and Metallurgy", *Comparative Studies in Society and History*, 27, 4 (1985), pp. 579–607. For an example from the United States, see Crandall A. Shifflett, *Coal Towns. Life, Work, and Culture in Company Towns of Southern Appalachia, 1880–1960* (Knoxville, 1991).

their own: "the woman's activities are centred on the home, in providing for husband and children".[59] This view was not only ahistorical, as many women, both in Europe and other parts of the world, have been employed as workers in mining, and many miners' wives and daughters have held jobs outside mining, it was also gender biased, as Angela John remarked in her study on women workers in Victorian coal mining: "their position has tended to be viewed solely in terms of the wife's back-up support for the male miner. Admittedly this was vital, but accounts of mining communities have not only forgotten the single woman and the widow, but have internalised the male miners' 'eye view'".[60] Or, in the words of Kuntala Lahiri-Dutt and Martha Macintyre: "Women in mining communities are not seen as active participants [...] [but] as miners' wives, staying at home and supporting their working class men".[61]

However much this may be true, in many mining communities in Europe, North America, and elsewhere there was a strict gender division of labour, at least during the twentieth century: women were supposed to support and care for male miners in the reproductive sphere, to enable them to do the demanding work underground. The routine of the household revolved around the routine of the pit and the needs of the miners.[62] While separated, male and female domains were complementary and mutually dependent. To enable the worker to perform the highly rationalized labour in the mines, organized in day and night shifts, it was the mining companies' preferred solution to relegate reproductive tasks to the miners' wives and keep them at home. Concern for the miner's family was part and parcel of the paternalist policies of these companies, directed at the families at large, and the reproductive tasks of the miners' wives in particular. The complementarity of male and female roles in wage and unpaid domestic labour had negative effects on opportunities for women, both married and unmarried, especially daughters, to find paid work in the labour market. The one-sidedness of the division of labour was thus perpetuated. Only in districts where mining was interspersed with, for instance, textile industry, could women find a job

59 M.I.A. Bulmer, "Sociological Models of the Mining Community", *The Sociological Review*, 23, 1 (1975), pp. 61–92, 87. See also Norman Dennis, Fernando Henriques, and Clifford Slaughter, *Coal is Our Life. An Analysis of a Yorkshire Mining Community* (London, 1956). For a secondary analysis of this mining community from a deliberately less gender-biased perspective, see Dennis Warwick and Gary Littlejohn, *Coal, Capital and Culture. A Sociological Analysis of Mining Communities in West Yorkshire* (London, 1992).

60 Angela V. John, *By the Sweat of Their Brow. Women Workers at Victorian Coal Mines* (London, 1980), pp. 14–15.

61 Kuntala Lahiri-Dutt and Martha Macintyre, "Where Life is in the Pits (and Elsewhere) and Gendered", in: *idem*, *Women Miners in Developing Countries*, pp. 1–22, 2.

62 Cf. Valerie Hall, *Women at Work, 1860–1939. How Different Industries Shaped Women's Experiences* (Woodbridge, 2013). See also Griselda Carr, *Pit Women. Coal Communities in Northern England in the Early Twentieth Century* (London, 2001).

more easily. In other cases, women sought income in "informal" activities, like gardening or lodging.[63]

The corollary of this strict division of labour was the development of an outspoken ideology of manhood and an image of masculinity attached to the mining profession. Part of this was a particular idea of values deemed "masculine", such as physical strength, capacity for hard labour, toughness, rough sports such as football, and, most of all, the strict observance of a gendered division of labour. George Orwell, writing about the mining communities in northern England in his famous novel *The Road to Wigan Pier* (1936), emphasized that even when unemployed a man would rarely do "a stroke of housework" for fear he "would lose his manhood".[64] While this attitude was supported by paternalist company policies, it was also very much part of the self-image of the miners, and of their representation in politics, unionism, literature, and other works of art, at least in the twentieth century.

In earlier periods, however, women had been employed in the mining industry in several parts of Europe, both below and above ground. In early modern German mining, women were employed above ground in picking, sorting, hammering, and washing the ore.[65] In coal mining, in the system of pillar and stall the employment of women was often part of a family concern: the male collier working at his post as a hewer was assisted by his wife and children.[66] The women's main task was to work as drawers: pulling sledges or tubs along the pit floor to the bottom shaft. It is an image made familiar by the French writer Emile Zola in his great novel *Germinal* (1884–1885) on the miners in northern France. One of the female characters, Catherine Maheu, works together in a team of male and female workers. Women worked underground as hauliers (*hiercheuses*). Both in France and in Belgium work in the coal mines was organized in this way, until underground labour for women was prohibited by law in 1892. Above ground, women continued to work as *hiercheuses*, *trieuses* (sorting coal), and *lampenistes*.[67] In Britain, working the mines in underground family teams was common in the eighteenth and early nineteenth centuries. By the 1840s, female colliery labour appears to have been declining slowly, and to have become concentrated in more clearly defined areas. The British Mines Act of 1842 excluded women from working underground, but, like in France and Belgium,

63 Notorious examples can be found in Chauncey, "The Locus of Reproduction".

64 George Orwell, *The Road to Wigan Pier* (London, 1936), p. 75, cited by Ben Clarke, "'Noble Bodies': Orwell, Miners, and Masculinity", *English Studies*, 89, 4 (2008), pp. 427–446, 433.

65 Cristina Vanja, "Bergarbeiterinnen. Zur Geschichte der Frauenarbeit im Bergbau, Hütten- und Salinenwesen seit dem späten Mittelalter. Teil I: Spätes Mittelalter und frühe Neuzeit", *Der Anschnitt. Zeitschrift für Kunst und Kultur im Bergbau*, 39 (1987), pp. 2–15.

66 *Idem*, "Teil II: Die Entwicklung im 19. und 20. Jahrhundert", *ibid*., 40 (1988), pp. 128–143.

67 Leen Roels, *Het tekort. Studies over de arbeidsmarkt voor mijnwerkers in het Luikse kolenbekken vanaf het einde van de negentiende eeuw tot 1974* (Hilversum, 2014). In Germany, by contrast, it was uncommon for women to work in the mines. See Christina Vanja, "Mining Women in Early Modern European Society", in: Thomas Max Safley and Leonard N. Rosenband (eds), *The Workplace before the Factory. Artisans and Proletarians, 1500–1800* (Ithaca, NY, 1993), pp. 100–117, 100.

in several districts (such as Lancashire) family labour groups simply reformed to encompass work above ground by women known as "pit brow lasses".[68]

In other parts of the world, women working underground in family teams persisted well into the twentieth century. In the Indian coalfields of Jharia and Raniganj, in 1924 almost fifty per cent of the women underground were working with their husbands, thirty per cent with relatives, and the remaining twenty per cent on their own.[69] Man and wife often worked in pairs: the man cutting, and the wife together with children and other kin loading, carrying, and hauling the coal. This was common as long as teamwork around the hewer, working at different posts in the room-and-pillar system, was prevalent. These were miners from the local "tribal" population of so-called Adivasi. A decline in the number of women working underground since the 1920s has been associated with the introduction of mechanized production techniques, both in coal cutting and transport, leading to the rationalization of production and the introduction of long-wall mining in a shift system, and the recruitment of male migrant labour for these mechanized mines. In 1929 underground labour by women was prohibited under the Indian Mines Act (within ten years).[70]

Until the late 1920s, such a system of family labour in underground teams could also be found in Japan, especially in the Kyushu coal mines in the south (much less so in the Hokkaidō mines in the north). The so-called *hitosaki* (a pair working team for mining) consisted of a *sakiyama* (male hewer "at the working face") and an *atoyama* (a female haulier "backstage in the pit"). In 1924 there were more than 68,000 female labourers in the coal mines nationwide, of whom 48,000 (seventy-one per cent) were working underground. Family work persisted as long as traditional stall-and-pillar mining prevailed. After the mid-1920s, mechanization of the production process and the replacement of stall-and-pillar by long-wall mining resulted in mass dismissals, especially of women. In 1928 female miners were prohibited from working underground by law.[71]

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68 John, *By the Sweat of Their Brow*, pp. 20–25.

69 Peter Alexander, "Women and Coal Mining in India and South Africa, c1900–1940", *African Studies*, 66, 2–3 (2007), pp. 201–222, 206.

70 *Ibid*., pp. 207–209. See also Shashank S. Sinha, "Patriarchy, Colonialism and Capitalism: Unearthing the History of *Adivasi* Women Miners of Chotanagpur", and Kuntala Lahiri-Dutt, "Mining Gender at Work in the Indian Collieries: Identity Construction by *Kamins*", in: Lahiri-Dutt and Macintyre, *Women Miners in Developing Countries*, pp. 89–108, and 163–181; Kuntala Lahiri-Dutt, "Kamins Building the Empire: Class, Caste, and Gender Interface in Indian Collieries", in: Gier and Mercier, *Mining Women*, pp. 71–87.

71 Sachiko Sone, "Japanese Coal Mining: Women Discovered", in: Lahiri-Dutt and Macintyre, *Women Miners in Developing Countries*, pp. 51–72; Regine Mathias, "Female Labour in the Japanese Coal-Mining Industry", in: Janet Hunter (ed.), *Japanese Women Working* (London and New York, 1993), pp. 99–121; Yutaka Nishinarita, "The Coal-Mining Industry", in: Masanori Nakamura (ed.), *Technology Change and Female Labour in Japan* (Tokyo, 1994), pp. 59–96.

Industrial relations, strike propensity, and political radicalism: an isolated mass?

I would guess that few sociological theories have been more thoroughly deconstructed than the idea of "the isolated mass" as an explanation of differences in "interindustry propensity to strike". In an endlessly cited and recycled article, published in 1954, Clark Kerr and Abraham Siegel argued that strike rates among geographically and socially isolated, cohesive, homogeneous groups of workers such as miners were higher than among other workers. Mining was one of those industries tending to "direct workers into isolated masses", which by themselves were supposed to be highly strike prone.[72]

Almost from the start, the thesis generated considerable controversy and an extensive secondary literature, perhaps because it was such an easy target.[73] Criticisms of the Kerr-Siegel hypothesis, apart from revealing shortcomings of the data and statistics, argued that industries such as mining, considered typical for the "isolated massness" of their workers, were in fact much less so; differences within industries were not accounted for; other possible explanations of strike behaviour, such as workplace characteristics, were neglected; it was not clear if the "isolated mass" was a necessary or sufficient condition for strikes to occur; the mobilizing or pacifying role of trade unions remained unaccounted for; the approach did not allow for changes in strike propensity over time; and the strike behaviour of miners varied greatly in different countries. While in Germany miners' unions were extraordinarily strong, with union densities in the 1950s and 1960s at around ninety per cent, strike propensity – probably for this reason – was quite low.[74] Shorter and Tilly even concluded that, historically, strike propensity in France was much higher among "integrated" than among "isolated" workers.[75]

In spite of the many criticisms, the Kerr-Siegel hypothesis continued to influence attempts to explain strike behaviour among coal miners, especially in Great Britain, well into the 1980s. Therefore, in the 1990s, Roy Church and Quentin Outram felt justified in subjecting the relationship between the "isolated mass" and strike propen-

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72 C. Kerr and A. Siegel, "The Interindustry Propensity to Strike – An International Comparison", in: A. Kornhauser, R. Dubin, and A.M. Ross (eds), *Industrial Conflict* (New York, 1954), pp. 189–212.
73 Gaston V. Rimlinger, "International Differences in the Strike Propensity of Coal Miners: Experience in Four Countries", *Industrial and Labor Relations Review*, 12, 3 (1958/59), pp. 389–405; P.K. Edwards, "A Critique of the Kerr-Siegel Hypothesis of Strikes and the Isolated Mass: A Study of the Falsification of Sociological Knowledge", *The Sociological Review*, 25:3 (1977), pp. 551–574.
74 Klaus Tenfelde, "Radikal, militant? Forschungen über Bergarbeiterstreiks im 20. Jahrhundert", in: Westermann and Westermann, *Streik im Revier*, pp. 381–404.
75 Edward Shorter and Charles Tilly, *Strikes in France, 1830–1968* (Cambridge, 1974), pp. 287–295: "The Kerr-Siegel 'isolation' hypothesis and France's experience".

sity in British coalfield history to systematic statistical testing.[76] Their conclusion was that the Kerr-Siegel hypothesis did help to explain variations in strike behaviour in interwar England and Wales between collieries, but that there was no linear relationship: "massed isolation" facilitated but by no means guaranteed high levels of strike activity. The main explanatory factor was the size of the workplace: bigger collieries were more strike prone than smaller ones. More importantly from a historical point of view was their conclusion about the inability of the model to offer an explanation of variation over time: collieries that have gone on strike frequently have rarely done so with any temporal consistency. Specific historical factors thus need to be added for the isolation of the miners' community to have any value in explaining strike behaviour.

The argument of "isolation" has been broadened by Klaus Tenfelde to explain the political radicalization of miners and other workers in specific historical contexts in the interwar years, but without the essentially static interpretation of the Kerr-Siegel model.[77] To explain communist success in some isolated German communities, he added a historical dimension by introducing the argument of a recent, sudden industrialization (*punktuelle Industrialisierung*). His argument can be combined with French research stressing the generational factor: radicalization could be found among second-generation migrants in this kind of newly established local community.[78] This is consistent with a more general critique of the "isolated mass" thesis and its corollary of the "occupational community": miners generally moved quite frequently, and supposedly homogeneous miners' communities were in fact highly diversified.[79]

Although from this perspective a universal relationship cannot be established, in many countries miners were in the forefront of radical politics. This could take several forms, both socially and politically, and in different political manifestations. The British Labour Party started its parliamentary representation in the early twentieth century from a regional base in the coalfield areas.[80] Miners in African colonies such as Zambia and Nigeria were in the forefront of national liberation movements.[81]

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76 Roy Church, Quentin Outram, and David N. Smith, "The 'Isolated Mass' Revisited: Strikes in British Coal Mining", *The Sociological Review*, 39, 1 (1991), pp. 55–87; Roy Church and Quentin Outram, *Strikes and Solidarity. Coalfield Conflict in Britain 1889–1966* (Cambridge, 1998), pp. 132–158: "Conflictual context? The 'isolated mass' revisited".

77 Klaus Tenfelde, "Social Consequences of Isolated Industrialization: The Case of Germany", in: Sakari Hänninen *et al.* (eds), *Meeting Local Challenges – Mapping Industrial Identities* (Helsinki, 1999), pp. 108–121.

78 Ad Knotter, "'Little Moscows' in Western Europe: The Ecology of Small-Place Communism", *International Review of Social History*, 56, 3 (2011), pp. 475–510.

79 Knotter, "Migration and Ethnicity in Coalfield History", pp. 35–38.

80 P.J. Taylor and R.J. Johnston, *Geography of Elections* (Harmondsworth, 1979), p. 398.

81 Thomas Rasmussen, "The Popular Basis of Anti-Colonial Protest", in: William Tordoff (ed.), *Politics in Zambia* (Berkeley, 1974), pp. 54–55; Carolyn A. Brown, *"We Were All Slaves". African Miners, Culture, and Resistance at the Enugu Government Colliery* (Portsmouth, NH, 2003).

During the twentieth century tin miners played a decisive role in altering the political structure of Bolivia.[82] In Spanish Asturias coal miners took the lead in a memorable uprising in the 1930s and in the opposition against the Franco regime in the 1970s. The communist-led Comisiones Obreras had its origins there.[83]

Especially in the 1930s and 1940s, many mining regions became communist strongholds. Communist parties considered miners "archetypical proletarians" and were often able to mobilize them around this identity.[84] Perhaps the Soviet hero Stakhanov is the ultimate symbol of the communist image of coal miners as tough proletarians. Nevertheless, communist or other radical political influences among miners cannot be ascribed to a kind of supposedly inherent or essential characteristic of their work or community. It always resulted from a specific configuration of political and class forces in specific moments in time. In French Nord-Pas-de-Calais coal-mining communist influence originated in the Popular Front and Resistance era between 1936 and 1944; it managed to survive the harsh repression during the 1948 miners' strike,[85] in contrast to the German Ruhr area, where interwar and postwar communist influence among miners melted away into a dominant social democratic electorate in the late 1940s.[86] In spite of their relative insignificance as a political party in Britain, communists were very influential in British miners' unionism, and had several strongholds in the South Wales and Scottish coalfields.[87]

Communist influence among miners was not restricted to Europe. In Australia, communism was firmly implanted in the coalfields of New South Wales.[88] In Chile, the communists had their major base in the mining areas: in 1947 they re-

82 Robert L. Smale, *"I Sweat the Flavor of Tin". Labor Activism in Early Twentieth Century Bolivia* (Pittsburgh, 2010).

83 Adrian Shubert, *The Road to Revolution in Spain. The Coal Miners of Asturias 1860–1934* (Urbana and Chicago, 1987); Holm-Detlev Köhler, *Asturien. Der Niedergang einer industriellen Region in Europa* (Essen, 1998).

84 Marc Lazar, "Le mineur de fond: un exemple de l'identité du PCF", *Revue française de science politique*, 35, 2 (1985), pp. 190–205. For the masculine connotation of this identity, see Hanna Diamond, "Miners, Masculinity and the 'Bataille du Charbon' in France 1944–1948", *Modern and Contemporary France*, 19, 1 (2011), pp. 69–84.

85 Marion Fontaine and Xavier Vigna, "La grève des mineurs de l'automne 1948 en France", *Vingtième siècle. Revue d'histoire*, 121 (2014), pp. 21–34.

86 Till Kössler, *Abschied von der Revolution. Kommunisten und Gesellschaft in Westdeutschland 1945–1968* (Düsseldorf, 2004).

87 Chris Williams, *Democratic Rhondda. Politics and Society, 1885–1951* (Cardiff, 1996); Alan Campbell, "Communism in the Scottish Coalfields, 1920–1936", *Tijdschrift voor Sociale Geschiedenis*, 18 (1992), pp. 168–190. See also Nina Fishman, *Arthur Horner. A Political Biography*, 2 vols (London, 2010).

88 Ellen McEwen, "Coalminers in Newcastle, New South Wales: A Labour Aristocracy?", and Andrew Reeves, "'Damned Scotsmen': British Migrants and the Australian Coal Industry, 1919–49", in: Eric Fry (ed.), *Common Cause. Essays in Australian and New Zealand Labour History* (Sydney, 1986), pp. 77–92 and 93–106; Martin Mowbray, "The Red Shire of Kearsley: 1944–1947: Communists in Local Government", *Labour History*, 51 (1986), pp. 83–94.

ceived seventy-one per cent of the coal miners' vote, and fifty-five per cent of the vote of the copper workers (nationally this was eighteen per cent).[89] I end this overview with the remarkable history of China's "Little Moscow" Anyuan,[90] not only because of the political and cultural configurations of communist implantation in this coal-mining town in the 1920s, but also because of the way memories of this episode were politicized during the Cultural Revolution to symbolize an authentically Chinese revolutionary tradition, above all encapsulated by the then famous painting "Chairman Mao goes to Anyuan". China is now experiencing a huge energy transformation from coal to renewable energy. Like in Europe, mining and mine labour will soon be something of the past – and of memory cultures and the writing of history.

Conclusion

In the traditions of European labour history mining has been privileged in the research of proletarian labour and anti-capitalist social movements. The "global turn" in labour history has made it clear that the idea of the miner as an "archetypal proletarian" was both Eurocentric and ahistorical however. Historically and globally, a broad array of labour relations existed in mining next to wage labour, sometimes in the same location. Studies of mining labour in different parts of the world exemplify the many variations in labour relations in capitalist development. They have led to generalizations about the articulation of different types of labour relations in forms of free and unfree labour, partial proletarianization, subcontracting, seasonal migration, and the gendered nature of reproductive labour, and also about the interconnectedness of labour mobilization and labour control. The debate on these themes has the potential to yield a more comprehensive view of global labour history in general, or at least to stimulate global comparative research of labour relations in other industrial sectors from a global perspective.

89 James Petras and Maurice Zeitlin, "Miners and Agrarian Radicalism", *American Sociological Review*, 32, 4 (1967), pp. 578–586, 579–580; on the Chilean coalfields see also Jody Pavilack, *Mining for the Nation. The Politics of Chile's Coal Communities from the Popular Front to the Cold War* (University Park, PA, 2011).

90 Elizabeth Perry, *Anyuan. Mining China's Revolutionary Tradition* (Berkeley, CA, 2012).

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